

**Clean set of complete claims as amended on February 24, 2003**

53. (Thrice Amended) A semiconductor wafer fabrication system comprising:

a sealed chamber for processing said semiconductor wafer having a first surface and a second surface; and a head assembly comprising:

a modulated light source exposing at least a portion of said semiconductor wafer to light having a wavelength and modulated at a frequency;

a surface photovoltage sensor comprising a plurality of electrodes positioned adjacent said first surface to detect a surface photovoltage induced at said first surface of said semiconductor wafer in response to said light without contacting said wafer, said plurality of electrodes sufficient for detecting said surface photovoltage on said first surface;

said surface photovoltage sensor of said head assembly located within said sealed chamber; and

a conveying apparatus conveying said wafer adjacent said voltage sensor of the head assembly.

54. The semiconductor wafer fabrication system of claim 53 wherein said sealed chamber is a reduced pressure chamber.
55. The semiconductor wafer fabrication system of claim 53 wherein said sealed chamber is a chemically reactive gas chamber.
56. The semiconductor wafer fabrication system of claim 53 wherein said sealed chamber is an inert environment chamber.
57. The semiconductor wafer fabrication system of claim 53 wherein said head assembly is entirely located within said sealed chamber.